

# History of cancer theories



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## Defining Cancer

Cancer is a group of diseases involving out-of-control growth of abnormal cell growth in a part of the body.

## Ancient Evidence of Cancer

The world's first recorded case of cancer was discovered in Egypt and dates back to about 2600 BC. It's called the Edwin Smith Papyrus, an ancient papyrus named after the dealer who bought it in 1862. The papyrus is a copy of the collected teachings of the great Egyptian physician Imhotep who live around 2625 BC. It describes 48 cases of injuries, fractures, wounds, dislocations and tumors. Every case is followed by a concise discussion of treatments. Case forty-five describes breast cancer as a " bulging mass in the breast", for which there is no cure.

In around 440 BC, the Greek historian Herodotus recorded in *The Histories* that Atossa, the queen of Persia, had a tumor upon her breast. She sought a self-imposed quarantine and ultimately allowed Democedes, her Greek slave, to cut off the tumor.

In addition to historical descriptions, there are also evidence of cancer found in mummified specimens of malignant tissues of cancers that had somehow preserved from ancient times. In 1914, a team of archaeologists found a tumor on a two-thousand-year old Egyptian mummy. In 1990, Arthur Aufderheide, a paleopathologist, found cancers in naturally desiccated mummies in a thousand-year-old gravesite in the southern tip of Peru.

The most striking finding, though, is not that cancer existed in the distant past, but that it was rare. In ancient times, people didn't live long enough to get cancer because cancer is a disease of older people, with incidence rates increasing with age for most cancers.

### Origin of the Word Cancer

The great Greek physician Hippocrates (460-370 BC), who is considered to be the “ Father of medicine”, used the word karkinos to describe malignant tumors because the finger-like spreading projections from such tumors reminded him of a crab. The Romans later translated the Greek term into cancer, the Latin word for crab.

Claudius Galen (130-200 AD), another Greek physician, used the word oncos (Greek term for swelling) to describe tumors. It is the origin of the word oncology, the study of cancer.

### Old Theories about Cancer

#### Humoral Theory (400 BC)

Hippocrates believed that the body contained 4 humors (body fluids), (1) blood, (2) black bile, (3) yellow bile, and (4) phlegm. Any imbalance of these fluids will result in disease. Hippocrates had opined that cancer was “ best untreated, since patients live longer that way.”

#### Galenic Theory (160 AD)

Claudius Galen, an influential Greek physician, took Hippocrates' humoral theory to the next level by classifying all illnesses in terms of excesses of

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various fluids. Inflammation was attributed to an excess of blood; tubercles was the excess of phlegm; jaundice was the excess of yellow bile; Cancer was the excess of black bile. Galenic theory suggested that cancer was the result of a systemic malignant state. Cutting the tumor out would not cure the disease. We should try systemic medicines to purge the black bile instead.

This black bile theory of cancer was standard through the Middle Ages for over 1400 years until the birth of modern human anatomy in the 16th century.

In 1533, Andreas Vesalius, who is considered the founder of modern human anatomy, arrived at the University of Paris to learn Galenic anatomy and pathology. To his disappointment, there were no map of human organs to guide him in surgeries. So he decided to create his own anatomy map, and scoured the graveyards around Paris for bones and bodies as specimens. In 1538, after becoming the professor of anatomy at the University of Padua, he published his drawings which showed anatomical charts of the blood and nervous systems. He wondered whether he could put the charts for practical use to treat diseases. The Galen's humoral theory of disease required the patient be bled and purged to squeeze the overgrown humors out of the body. So he tried to locate the four humors in his chart. The lymphatic system carried a pale fluid, the blood vessels were filled with blood, yellow bile was in the liver. But he could not find Galen's black bile. He kept quiet about his discovery that there was no black bile, and left his drawings just as he saw things.

In 1793, Matthew Baillie, an anatomist in London, wanted to map the body in its diseased abnormal state. He too was looking for black bile, but couldn't find it on charts of a normal body. He thought that black bile may not have existed in normal tissue, but tumors should have been full of it. So he started mapping the body with tumors. But he could not find the black bile anywhere - not even in the tumors. Like Vesalius, he left his anatomy and cancer drawing the way he actually saw it.